National Wildlife Disease Program

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Program Activity Report (PAR)

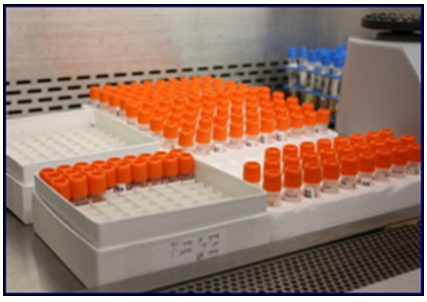
Wild Bird Tissue Archive - A Valuable Resource

The Wild Bird Tissue Archive maintained by the NWDP and Colorado State University Veterinary Diagnostic Laboratory, is a repository for almost 300,000 swab samples originally collected for Highly Pathogenic Avian Influenza surveillance, conducted nationwide from 2006 until March, 2011. A recent project illustrates the type of research that can be supported by the archive holdings.

Borna Disease (BD) is a neurological disease that has been found in horses, sheep, goats, llamas, cattle, dogs, domestic cats, rabbits, deer, lynx and humans. It can cause fatal movement and behavioral disorders in warm-blooded animals, and perhaps some neuropsychiatric disorders in humans. The causative agent is Borna Disease Virus (BDV). BDV is a non-segmented negative strand RNA virus (Family Bornaviridae). It's name comes from the Saxon (German) city of Borna where the disease was common in the early 20th century, killing more than 16,600 horses between 1896 and 1940. The natural host is believed to be the bicolored white-toothed shrew (*Crocidura leucodon*). The virus is shed in the shrew's urine. Other wildlife hosts have been proposed but not confirmed.

A second member of the family Bornaviridae was identified in 2008. Avian Borna Virus (ABV) causes proventricular dilation disease (PDD) in psittascine birds (parrots, macaws, conures). PDD is characterized by damage to the nerves of the enteric system. Food accumulates in the paralyzed proventriculus, eventually leading to death. There are a few reports of wild Canada geese and displaying PDD-like symptoms. Scientists have also detected ABV in brain tissue of trumpeter swans exhibiting neurological disease.

In July 2010, researchers at Texas A & M University requested a loan of Canada goose swab samples from the Wild Bird Tissue Archive. The archive was able to quickly identify and provide over 400 Canada goose samples from 12 states and all four migratory flyways. In addition, NWDP wildlife disease biologists in New Jersey and Kansas submitted heads of apparently healthy, hunter-harvested or nuisance Canada geese. In the laboratory, all samples were screened by PCR. Samples found positive for ABV were cultured and then sequenced.



The results are that bornavirus has been found, isolated, and sequenced from a number of the samples. Researchers have concluded that ABV is common in Canada geese. The initial work has been described in a manuscript submitted to the Journal of Virology. Results from mute swans and lesser snow geese are pending. This is a great example of the type of research support that was envisioned when the Wild Bird Tissue Archive was established.

For more information please contact John Baroch, John.A.Baroch@aphis.usda.gov

The original artwork on this page was created by the National Wildlife Disease Program's Erika Kampe and Sarah Goff